

## The Clyde Valley Wader Initiative: How applied ecology is informing the conservation of waders in South Lanarkshire

Toby Wilson<sup>1</sup> and Dan Brown<sup>2</sup>

<sup>1</sup>Conservation Officer, RSPB Scotland, 10 Park  
Quadrant, Glasgow G3 6BS toby.wilson@rspb.org.uk

<sup>2</sup>Globally Threatened Species Officer, RSPB  
Scotland, 2 Lochside View, Edinburgh Park,  
Edinburgh EH12 9DH

E-mail: dan.brown@rspb.org.uk

### ABSTRACT

Most species of grassland breeding wading birds ('breeding waders') have suffered dramatic declines in Scotland over the past 30 years and are now a priority for the work of the RSPB. The Upper Clyde Valley (including the Duneaton, Elvan, Daer and Medwin Waters and the River Clyde) continues to hold regionally, and for some species nationally, important populations of breeding lapwing, oystercatcher, curlew, snipe and redshank. The Clyde Valley Wader Initiative was instigated in 2008 with the aim of maintaining and increasing these populations through targeting funding and advice to landowners to encourage them to undertake 'wader friendly' farming practices, which are informed by the latest research into wader ecology.

### INTRODUCTION

Breeding waders form an important part of the natural heritage of our farmland and uplands and the evocative calls and flight displays of species such as lapwings and curlews are often cited by authors and poets as capturing the spirit of the countryside. Whilst there are separate trends for different species, overall the populations of breeding waders have declined significantly since the 1990's (see Table 1).

Largely due to these population declines, lapwings are included on the 'red-list' of high conservation concern and curlews, oystercatchers, redshanks and snipe are included on the 'amber-list' of medium conservation concern in the assessment of the status of birds in the United Kingdom (Eaton et al. 2009). Curlews, lapwings, redshanks and snipe have been identified as a priority for the RSPB's work in the UK.

**Table 1.** Trend of breeding waders in the UK (Risely et al. 2012).

Breeding waders	Population trend (1995 - 2011)
Curlew	-45%
Lapwing	-41%
Oystercatcher	-16%
Redshank	-42%
Snipe	+8*

\*This masks a significant post-war decline (Smart et al. 2008).

These population declines triggered a significant amount of research into breeding waders and this applied ecology has given us an understanding of both the needs of this group of birds and the likely drivers of their decline (Sheldon et al. 2004).

The grassland breeding waders that the project focuses on, namely curlews, lapwings, oystercatchers, redshanks and snipe all favour slightly different habitats for foraging and nesting. Lapwings and redshanks generally favour shorter swards, with few or scattered tussocks, whilst curlews and snipe prefer longer swards, with denser tussocks (Youngs, 2005). Collectively, however they tend to be associated with less intensively managed farmland, with high water levels; a degree of cover - often in the form of soft rush *Juncus effusus* and an open landscape, away from forestry or hedgerows (Stillman et al. 2006)

The primary cause of the decline in breeding waders is thought to be habitat change and degradation, including the drainage of wetland, the conversion of arable farmland from spring to autumn cropping and the planting of conifer forests on marginal farmland has fragmented open landscapes which waders prefer (Wilson et al. 2004, Eglington et al. 2008). There is increasing evidence showing predation is a proximate driver of declines, in the uplands, as a result of declines in predator control, principally undertaken by game-keepers, and due to afforestation increasing the densities of predators of open landscapes (Douglas et al. 2013, Smart et al. 2013). Climate change, and in particular increased rainfall at certain times of year, may also be putting pressure on wader populations (Hulme, 2005).

### Previous Studies in the Clyde Valley

There have been several breeding wader surveys carried out in the Clyde Valley area (encompassing, for the purpose of the project and this article, parts of the floodplains and surroundings of the

Duneaton, Elvan, Medwin and Daer Waters and River Clyde in South Lanarkshire) in the last 25 years, starting with extensive surveys by local volunteer Alan Wood in the late 1980's. There were then a handful of sites surveyed in 1992/93 as part of a nationwide survey to assess key breeding wader sites on Scottish in-bye farmland (O'Brien and Bainbridge, 2001). Some of these sites were then resurveyed in 2005 as part of a research project to see how breeding waders responded to sites under agri-environment management compared to sites without agri-environment management (O'Brien and Wilson, 2011). Finally, some farms in the area were surveyed as part of RSPB Lapwing Recovery Project in 2007/08, which assessed whether additional management for waders, on top of agri-environment prescriptions, could result in increased breeding success.

This background survey information, coupled with the anecdotal evidence that the Clyde Valley still had good numbers of breeding waders, lead to RSPB Scotland prioritising the area for work and embarking on the Clyde Valley Wader Initiative; a landscape-scale project with the aim of addressing the declines in breeding waders. It seems to be the case that when managing for specific species of conservation concern, working at a landscape-scale is more effective (Dallimer, 2010). This is likely to be particularly pronounced for breeding waders, which favour open landscapes, with minimal field boundaries (Stillman et al. 2006).

### **Funding**

A further driver of the Clyde Valley Wader Initiative was the provision of funding for 'wader-friendly' management through the Scotland Rural Development Programme (SRDP), specifically the 'Farmland Waders' package of the competitive Rural Priorities scheme, and to a lesser extent, some options within the uncompetitive Land Managers Options' scheme. SRDP is administered by the Scottish Government and are made up of European and domestic funding. RDC differs from the other funds in SRDP in that it is a competitive process, whereby rural businesses prepare bids for funding, with the aim of targeting money to where it will achieve most benefits. The Scottish Agricultural College (now SAC Consulting) acted as agents for many farmers in the Clyde Valley and was responsible for drawing up the bids for RDC funding. RSPB Scotland was concerned that without additional advice, the lack of information and resources available to those developing the bids or administering the funds might have meant that funding went to areas where no waders were ever likely to present, because for example, they were too close to forestry or on unsuitable fields for breeding waders. Due to this concern, RSPB Scotland approached SAC with the aim of advising

them on funding bids for wader packages and supporting appropriate bids to SRDP.

### **Assessing Farms**

SAC acted as agents for many of the farms in the Clyde Valley. Partly because it fitted with existing management practices and partly because of the connection made between SAC and RSPB Scotland, many of these farms submitted bids for SRDP funding based on management for breeding waders. By far the greatest form of management proposed involved minimising grazing pressure on fields entered into the bid to avoid the risk of trampling of nests, as this tended to tie-in with existing farm practices. Staff from RSPB Scotland visited all the farms to discuss the management with the farmers and assess and advise on their suitability for breeding waders. Factors when assessing the suitability of the fields were:

- Extent of rush cover (approximately 20% - 30% was positive, over 40% negative)
- Areas of surface water or mud (positive)
- Presence of waders (positive)
- Proximity of hedgerows or forestry (negative) and wider landscape character

One challenging issue that arose was that new hedgerows were proposed in many of the bids to gain additional points under the RDC scoring programme. Sometimes the hedgerows were to cross areas that were proposed to be managed for breeding waders, which would be likely to reduce their value for this group of birds. In this instance RSPB Scotland advised that they should be removed.

Where RSPB Scotland considered that the management proposed would be beneficial for breeding waders, staff wrote a letter of support to accompany the bid for SRDP funding.

### **SRDP Results**

Since the Clyde Valley Wader Initiative began in 2008 it has been involved in helping to bring 38 farms spread over 32 farm businesses and covering approximately 2000ha of the Clyde Valley into some form of management agreement for breeding waders. Around 98% of bids that were supported by RSPB Scotland were successful in acquiring SRDP funding and from discussions with case officers assessing the funding bids, the letters of support provided by RSPB Scotland were extremely useful in providing confidence that the money was going to be directed to appropriate areas.

Importantly, for the rural economy and for the decision-makers that see this as a priority, the bids supported by RSPB Scotland brought approximately £1 million into the area (based on per hectare payments over the five year period for which SRDP ran). Because breeding waders tend to favour less



intensive farmland (Stillman et al. 2006) many of the farms involved in CVWI are likely to be described as marginal within the farming system. This makes SRDP funding even more important in sustaining the farmed landscape.

### Limitations of SRDP

Whilst the 'Farmland Waders' package of the RDC was welcome, the uptake of the range of management methods for waders was minimal on the farms in the CVWI and largely focussed on limiting grazing at certain times of year. Few farms opted to undertake more 'active' work for waders, such as scrape creation, ditch re-profiling or culvert breaking (to rewet drained areas), which enhance the value of the farmland by providing feeding opportunities for waders. Anecdotally, this was because they were not eligible for payments or those offered were not sufficient for it to be worthwhile. A further limitation was that despite having areas holding good numbers of breeding waders, some farms in the Clyde Valley could not achieve enough points on the RDC scoring scheme to make a bid worthwhile.

### Results and monitoring

A programme of monitoring was established in 2012 in order to assess the effectiveness of the management. Farms are surveyed every three years using the O'Brien and Smith method for censusing lowland breeding wader populations. In summary,

this involves three visits at least one week apart between 15 April and 19 June, with surveys mostly being carried out within three hours of dawn (Gilbert et al 1998). Habitat data is captured on a field-by-field basis, and surveyors record sward length, ground moisture, area of rush pasture and management of rush pasture. Fixed-point photography is also used to help monitor changes in sward structure and surface water cover. As well as recording changing bird numbers and habitats, these surveys are also useful for RSPB Scotland to keep in contact with farmers and discuss any issues which may arise that could influence local or national management. The farms were grouped together into five main areas.

In 2012 volunteers surveyed approximately 1,000 hectares of farmland and recorded 186 pairs of breeding waders. When tallying up the numbers across all five groups of farms, 63 lapwing, 49 curlew, 44 oystercatcher, 19 snipe and 11 redshank breeding pairs were recorded. Recording snipe accurately can prove difficult due to their secretive nature, and there is always the possibility that snipe may be under-recorded in wader surveys. The figures in Table 1 will be used as the baseline population sample. We will compare surveys of the same sites in future years with these figures to provide information on the population trends across the project area.

Site name	Lapwing	Curlew	Oystercatcher	Snipe	Redshank	Total
Watermeetings to Elvanfoot	24	22	20	7	5	78
Tarbrax	7	7	2	6	0	22
Eastertown	12	6	6	1	0	25
South Medwin	4	2	3	0	0	9
Duneaton Water	16	12	13	5	6	52
Total	63	49	44	19	11	

**Table 2.** Breeding pairs at CVWI sites.

	Lapwing	Curlew	Oystercatcher	Snipe	Redshank
Guideline Breeding Density for Site to be of National Importance	16.8	7.5	10.1	6.1	3.6
Watermeetings to Elvanfoot	7.3	6.6	6	2.1	1.5
Tarbrax	2.7	2.7	0.8	3.0	0.0
Eastertown	5.7	2.8	2.8	0.5	0.0
Duneaton Water	10.2	7.6	8.3	3.2	3.8

**Table 3.** Breeding densities (breeding pairs per km<sup>2</sup>) at CVWI sites.

## Breeding Densities

By knowing the area of the different sites, the breeding densities can be calculated by dividing the number of breeding pairs by the area surveyed. The work by O'Brien and Bainbridge (2001) produced guidelines to help determine whether a site could be considered of 'national importance', by producing 'density thresholds' for each species.

Table 2. shows (a) a breakdown of the total number of breeding pairs of the different species at each site (b) the total number of breeding waders of all species at each site, and (c) the total number of breeding birds of each species across the entire survey area.

Table 3 shows the density of breeding pairs at each site, compared to the guideline densities for nationally important sites. Instances where the density on the site exceeds the guideline density are shaded in grey. So, the Duneaton Water site is of national importance for breeding redshank and curlew. The South Medwin site has been omitted because it constituted a relatively small survey area: sites need to be larger than 1km<sup>2</sup> to provide reliable density estimates.

## CONCLUSIONS

Breeding waders are in decline across the UK. The Clyde Valley Wader Initiative has used applied ecology to identify important areas for this group of birds and inform what management needs to be maintained or put in place to ensure their numbers are stabilised or increased. By working with SAC, RSPB Scotland has been able to positively influence land management for waders across a sizeable area of land. Ongoing monitoring of the farms in the Clyde Valley Wader Initiative will help to establish whether the management is proving effective and if necessary make adjustments to optimise it in the future.

The surveys have confirmed that some areas within the CVWI project host nationally important breeding densities for certain species (curlew and redshank). We are only sampling a handful of sites so there will likely be other areas also supporting nationally important densities. Some sites fell just below these thresholds. It is important to bear in mind that these thresholds were based on population and site data from the early 1990's. All farmland waders (except snipe) have declined considerably since then, so the density threshold for a site to be of national importance will have changed and will now be based on lower densities.

CVWI has proved a useful advocacy tool in demonstrating how conservationists can work positively with the farming community.

## NEXT STEPS

The farms that were successful in obtaining SRDP funding will continue to be paid for undertaking management for five years. Following this, it is hoped that there will be a new round of funding that will continue to support the measures within the 'Farmland Waders' package and ideally make improvements to the requirements. In the meantime, RSPB Scotland has a small amount of money provided by Community Windpower to pay for additional measures, such as scrape creation that are not funded by SRDP or target farms that hold waders but did not enter in to RDC. Staff are currently liaising with farmers to deliver this. RSPB Scotland will continue to undertake monitoring of the sites.

## ACKNOWLEDGEMENTS

We are extremely grateful to RSPB volunteers who all generously volunteered their time to undertake the surveys. Without their ornithological skills and passion for conservation, the work would not have been possible. We are also grateful to all of the farmers and landowners who allowed access to their land and showed willingness to take part in CVWI, and to Grant Conchie and Ken Phillips at SAC Lanark for their continued collaboration in this project.

## REFERENCES

- Dallimer, M., Gaston, K.J., Skinner, A.M.J., Hanley, N., Acs, S. & Armsworth, P.R. (2010). Field-level bird abundances are enhanced by landscape-scale agri-environment scheme uptake. *Biology Letters* 6, 643-646.
- Douglas D, Bellamy P, Stephen L, Pierce-Higgins J, Wilson J, Grant M (in press). Upland land use change drives population decline in a breeding wader of global conservation concern. *Journal of Applied Ecology*
- Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009). Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 102, 296-341.
- Eglinton, S. M., Bolton, M., Smart, M. A., Sutherland, W. J., Watkinson, A. R. and Gill, J. A. (2010) Managing water levels on wet grasslands to improve foraging conditions for breeding northern lapwing *Vanellus vanellus*. *Journal of Applied Ecology* 47, 451-458.
- Gilbert, G., Gibbons, D.W., Evans, J. (1998) *Bird monitoring methods: a manual of techniques for key UK species*. RSPB, Sandy.
- Hulme, P.E. (2005) Adapting to climate change: is there scope for ecological management in the face of a global threat? *Journal of Applied Ecology* 42, 784-794.



- O'Brien, M & Bainbridge, I (2001) The evaluation of key sites for breeding waders in lowland Scotland. *Biological Conservation* 103, 51-63.
- O'Brien, M. & Wilson, J.D. (2011) Population changes of breeding waders on farmland in relation to agri-environment management. *Bird Study* 58, 399-408.
- Risely, K., Massimino, D., Newson, S.E, Eaton, M .A., Musgrove, A.J., Noble, D.G, Procter, D. & Baillie, S.R. 2013. The Breeding Bird Survey 2012. *BTO Research Report* 645.
- Sheldon, R., Bolton, M., Gillings, S. and Wilson, A. (2004), Conservation management of Lapwing *Vanellus vanellus* on lowland arable farmland in the UK. *Ibis* 146, 41-49.
- Smart, J., Amar, A., O'Brien, M., Grice, P. and Smith, K. (2008), Changing land management of lowland wet grasslands of the UK: impacts on snipe abundance and habitat quality. *Animal Conservation* 11, 339-351.
- Smart, J., Bolton, M., Hunter, F., Quayle, H., Thomas, G., Gregory, R. D. (2013), Managing uplands for biodiversity: Do agri-environment schemes deliver benefits for breeding lapwing *Vanellus vanellus*?. *Journal of Applied Ecology* 50, 794-804.
- Stillman R. A., MacDonald M. A., Bolton M. R., dit Durell S. E. A. le V., Caldow R. W. G. & West A. D. 2006 Management of wet grassland habitat to reduce the impact of predation on breeding waders: Phase 1 Final Report to DEFRA <[http://nora.nerc.ac.uk/3393/1/WetGrasslandRepPhase1DefraBD1324\\_5933\\_FRA.pdf](http://nora.nerc.ac.uk/3393/1/WetGrasslandRepPhase1DefraBD1324_5933_FRA.pdf)> (Accessed 10.9.13)
- Hulme, P. E. (2005), Adapting to climate change: is there scope for ecological management in the face of a global threat? *Journal of Applied Ecology* 42, 784-794.
- Wilson, A.M., Ausden, M. & Milsom, T.P. (2004) Changes in breeding wader populations on lowland wet grasslands in England and Wales: causes and potential solutions. *Ibis*, 146 (Supplement. 2), 32-40.
- Youngs, T (2006), Wet Grassland Practical Manual: Breeding Waders. RSPB, Sandy, Bedfordshire.

Endrick Water. Situated on the southern shores of Loch Lomond it forms part of the Loch Lomond National Nature Reserve and is a Site of Special Scientific interest, Special Area of Conservation, Special Protection Area, and a Wetland of International Significance under the Ramsar agreement. The site came into RSPB ownership in spring 2012 after generous donations from supporters of the RSPB, The National Heritage Memorial Fund, Scottish Natural Heritage (SNH) and The Loch Lomond and The Trossachs National Park (LLTNP). The management of the site is through a partnership with RSPB Scotland, SNH and LLTNP and it is hoped that through careful management the site can give a home to nature and a place for people to be with nature.

The broad range of habitats is one of the features that make the site so special. Sitting on the highland boundary fault means that there are species represented at their most northerly range and others at their most southerly range. The Endrick Water is an obvious feature of the site and has a large impact on hydrology and morphology. Despite being, only about 50km long it deposits an estimated 13,800 tonnes per annum of silts and gravel extending and reforming The Ring Point: a 1.6km bar created as the Endrick water meets the Loch (Mitchell 2001).

One of the key species of this river is *Lampetra fluviatilis*, river lamprey. Lamprey are a primitive family of jawless fish whose fossil record stretches back over 450 million years ago (making it the tiny dinosaur of the title). The population in the Endrick is unique in the UK for its unusual behaviour. River lamprey are a migratory species and spawn in freshwater. After about two years the young leave the rivers and head out to estuaries to reach maturity, The river lamprey in the Endrick differ in the fact that they do not mature in the saline waters of the Clyde, they remain in the freshwaters of Loch Lomond where they feed mainly on another special species of the area *Coregonus lavaretus*, powan (Maitland 2007). Another species unique to the area is *Rumex aquaticus*, Scottish or Loch Lomond dock. As the common name suggests, within the UK, this species is limited to Loch Lomondside. Despite reaching heights of over 2m (taller than your average botanist) it was not described as species in the UK until 1935.

Away from the Endrick but still sustained by its flow are the fens and meadows of the site, these support a wealth of wildlife including a nationally important wintering population of *Anser albifrons flavirostris*, Greenland white-fronted geese, *Lutra lutra* otter, breeding wading birds like *Gallinago gallinago* snipe and a diverse and often specialised group of invertebrates like *Donacia aquatica* zircon reed beetle and *Hydroporus rufifrons* ox-bow lake diving

## Giant docks and tiny dinosaurs: RSPB Loch Lomond

Robert Coleman

RSPB Loch Lomond, High Wards Farm, Gartocharn,  
Alexandria West Dunbartonshire G83 8SB

E-mail: [Robert.Coleman@rspb.org.uk](mailto:Robert.Coleman@rspb.org.uk)

RSPB Loch Lomond is 237ha of mixed wetland habitats and farmland within the flood plain of the